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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,568	11/19/2003	Setsuo Mishima	Q78557	5060

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
MCNELIS, KATHLEEN A	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/715,568	MISHIMA ET AL.	
	Examiner	Art Unit	
	Kathleen A. McNelis	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/21/2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

3Claims Status

Claims 1-8 remain for examination wherein claims 1 and 5 are amended.

Status of Previous Rejections

The previous rejection of claim 5 under 35 U.S.C. 112 2nd paragraph is withdrawn in view of applicants' amendment of the claim.

The previous rejections of claims 1-8 under 35 U.S.C. 103(a) are withdrawn in view of applicants' amendments of the claims.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-214212[1] in view of Floreen (U.S. Pat. No. 4,443,254) and JP-56-090957[2].

JP 2001-214212 (JP '212) discloses a method for producing Ti-containing maraging steel (¶ 0001) by vacuum inducting melting as in instant claim 2 followed by vacuum arc re-melting (¶ 0002) as in instant claims 1 and 3. JP '212 discloses manufacturing a thin strip of 3.5 mm thickness (¶ 0017) which is within the range of not more than 0.5 mm in instant claims 4, 5 and 6. The size of the nitride inclusions is limited to 10 μm (¶ 0004), which is within the claimed range of ≤ 15 μm in instant claim 5. The composition disclosed by JP '212 compared with instant claims is as follows:

Component	Instant (from Claim 6 unless otherwise noted)	JP '212 (¶ 0012)
C	≤ 0.01 %	≤ 0.01%
Ni	8.0% to 22.0%	16 – 26%
Co	5.0 to 20.0%	5-16%
Mo	2.0 to 9.0 %	2-10%
Ti	0.3% ≤ Ti ≤ 2.0%	0.1 to 2.0%
Al	≤ 1.7 %	0.03- 0.4%
Mg	≥ 5 ppm (claim 1) 0 < Mg < 10 ppm (claim 5) 0 < Mg < 10 ppm (claim 6)	Not stated

[1] Based on abstract and machine translation of detailed description section of the patent. Machine assisted human translation will be provided by USPTO when available.
[2] Based on abstract and oral translation by USPTO translator. Written translation will be provided by USPTO when available.

Component	Instant (from Claim 6 unless otherwise noted)	JP '212 (¶ 0012)
O	< 10 ppm	Not stated
N	< 15 ppm	Not stated
Impurities + Fe	Balance	Remainder

The carbon content in JP '212 of ≤ 0.01% is the same as the claimed range of ≤ 0.01%. The range disclosed in JP '212 of 16-26% nickel content overlaps with the claimed range of 8.0% to 22.0%. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a nickel content of between 16 and 22% in the maraging steel of JP '212, since JP '212 discloses that any nickel content between 16 and 26% has equal utility. The range disclosed by JP '212 of from 5-15% cobalt is within the claimed range of between 5 and 20%. The range disclosed by JP '212 of from 0.1 to 2.0% Ti overlaps the claimed range of 0.3% ≤ Ti ≤ 2.0%. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a titanium content of between 0.3 and 2.0% in the maraging steel of JP '212, since JP '212 discloses that any titanium content between 0.1 and 2.0% has equal utility. The range disclosed by JP '212 of from 0.03 to 0.4% aluminum is within the claimed range of between ≤1.7%.

With respect to claims 1, 5 and 6, JP '212 does not disclose adding Magnesium to the steel.

Floreen discloses a method for producing a cobalt-free maraging steel (abstract) containing nickel (17 – 19%), molybdenum (1-4%), titanium (1.25-2.5%) aluminum (0.25 to 0.3%) and up to 0.03% carbon, balance iron, trace additives and impurities (col. 1 line 64- col. 2 line 21). With the exception of cobalt, the ranges of primary alloying elements

are within, overlapping or close to the ranges in the instant claims and JP '212. The maraging steel is preferably produced by vacuum induction melting, followed by vacuum arc remelting. Magnesium is added for deoxidizing and/or malleabilizing purposes (col. 3 lines 11-16) up to 0.25% (col. 5 lines 9-10). A stated objective in JP '212 is reduction of impurities including oxygen (¶ 0002). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use magnesium as taught by Floreen in the maraging steel production process of JP '212 as a deoxidizer as taught by Floreen. The range of up to 0.25% overlaps the claimed ranges of ≥ 5 ppm (claim 1) and 0 < Mg < 10 ppm (claims 5 and 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to control the amount of Mg addition to between 5 and 10 ppm since Floreen teaches equal utility of Mg as an additive for deoxidization up to 0.25%.

The maraging steel in Floreen does not contain cobalt. JP 56-090957 (JP '957) teaches a method of producing maraging steel containing cobalt, nickel, molybdenum and titanium wherein magnesium is added (abstract) as a deoxidizing agent and to improve the maraging steel's resistance to stress corrosion cracking (p. 3). While JP '957 does not disclose the same production method as JP '212 in view of Floreen, this prior art is cited as evidence that magnesium can be used as a deoxidizer in a maraging steel containing cobalt as well as titanium, nickel, aluminum and molybdenum alloying elements. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use magnesium as taught by Floreen and JP '957 in the

production of maraging steel in the process of JP '212 to deoxidize as taught by Floreen and JP '957.

With respect to claim 5, JP '212 in view of Floreen and JP '957 does not disclose that the content of the spinel form inclusions having a size of not less than 10 μm in length divided by the total content of the spinel form inclusions having a size of not less than 10 μm in length plus the alumina inclusions having a size of not less than 10 μm in length is more than 0.33.

However, as discussed above, the composition and method of making the maraging steel taught by JP '212 in view of Floreen and JP '957 is substantially the same as that of the instant invention. Therefore, it is inherent that the proportion of nonmetallic inclusions of spinel and alumina should be substantially the same in JP '212 in view of Floreen and JP '957 as the instant invention.

With respect to claim 6, JP '212 in view of Floreen and JP '957 discloses a maraging steel with substantially the same composition of carbon, nickel, cobalt, molybdenum titanium aluminum and magnesium as discussed above.

JP '212 in view of Floreen and JP '957 does not specifically state that the content of oxygen is less than 10 ppm or nitrogen less than 15 ppm.

JP '212 discloses the reduction of impurities such as nitrogen and oxygen as an objective (¶ 0002). Further, Floreen uses magnesium as a deoxidizer and the process disclosed by both JP '212 and Floreen is substantially the same as that of the instant invention. Therefore it is inherent that the content of impurities in JP '212 in view of Floreen and JP '957 would be substantially the same or similar to the instant invention.

Response to Arguments

Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571-272-3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700